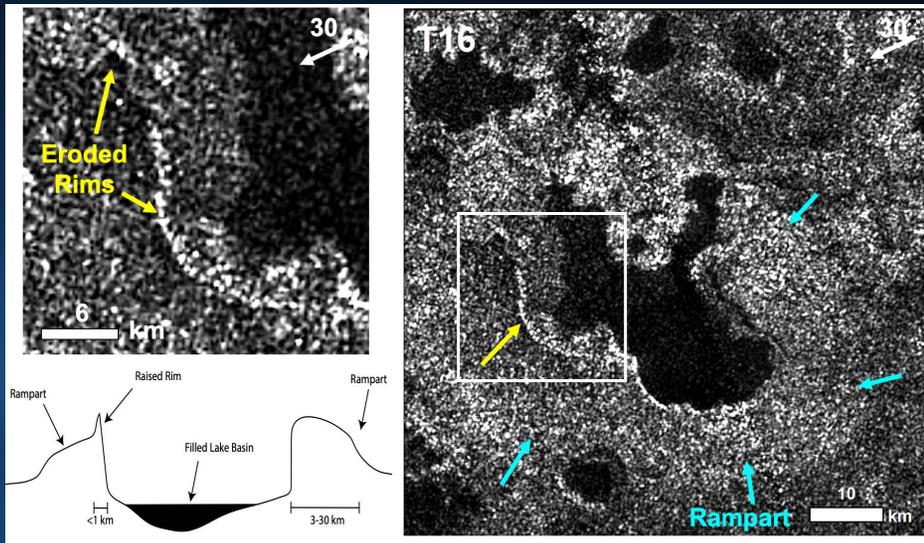


# Ramparts Discovered Around Titan Lakes



Right: T16 SAR image of Viedma Lacus. Cyan arrows denote portions of the perimeter of the rampart feature, a SAR-bright apron that encloses nearly the entire lake. Yellow arrows denote portions of the raised rim. Top Left: Zoom into the raised rim portion of the lake perimeter, denoted by the white box in the right image. The rim appears eroded in multiple sections; Bottom Left: Conceptual model of a lake with a rampart and rim (not to scale).

Cassini observations of Titan have revealed ~650 polar lakes and seas. Modeling efforts, supported by Cassini data, suggest the liquid composition to be a mixture of methane/ethane with a contribution of dissolved nitrogen. The surface of Titan has abundant carbon-rich molecules (hydrocarbons) that have been shown to form amino acids, the building blocks of proteins needed for life, when exposed to liquid water in laboratory simulations.

- A small subset of the north polar lakes (<10) show peculiar features that look like raised ramparts surrounding the lakes.
- Lake formation remains an open question in Titan science. Rampart lakes, which are few, may yield important clues to the formation of Titan's lakes in general and provide clues on the composition and astrobiology potential of these areas.

- We have investigated five northern filled lakes with raised ramparts and three empty lakes from a nearby region, extracting spectral and emissivity information from Cassini VIMS and RADAR data.
- We have found that the raised ramparts exhibit spectral and emissivity characteristics that are generally distinct from the surrounding terrain. The features also display many similarities to those of the floors of empty lakes. Both units are probably made or covered by the same material indicating a connection in their formation.